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EXAMINER
BRADLEY, MATTHEW A

ART UNIT	PAPER NUMBER
2187	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/766,784	DAVIES ET AL.
	Examiner	Art Unit	
	Matthew Bradley	2187	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _28 January 2004_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-71_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-71_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _28 January 2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _1/28/04_.

4)☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on 28 January 2004

was filed on the mailing date for application 10/766,784. The submission is in

compliance with the provisions of 37 CFR 1.97. Accordingly, the Examiner is

considering the information disclosure statement with a signed and initialed copy

being attached hereto.

Claim Status

Claims 1-71 remain pending and are ready for examination.

Specification

The lengthy specification has not been checked to the extent necessary to

determine the presence of all possible minor errors. Applicant's cooperation is

requested in correcting any errors of which applicant may become aware in the

specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly
claiming the subject matter which the applicant regards as his invention.

Claims **50-51** are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject

matter which applicant regards as the invention.

As per claim **50**, the instant claim language recites, "…a computer usable

medium having computer readable program code causes the storage controller,

." This is indefinite. Insofar as is appears to be clear, the Examiner notes that no

additional limitations are present which would cause the storage controller to perform any action.

As per claim **51**, the instant claim language recites, "... a transmission medium comprising computer readable program code provides the storage controller." This is indefinite. The Examiner is unsure as to how the code provides the storage controller.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims **50-51** are not limited to tangible embodiments. In view of applicants' disclosure, specification pages 35-37, paragraph 81, the medium is not limited to tangible embodiments, instead being defined as including both tangible embodiments (e.g., RAM, ROM, EEPROM, ...) and intangible embodiments (e.g., carrier wave). As such, the claims are not limited to statutory subject matter and are therefore non-statutory.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1-8**, **10**, **13-27**, **29-34**, **39-52**, and **54-70** are rejected under 35

U.S.C. 102(b) as being anticipated by Hubis et al (U.S. 6,343,324) hereinafter

referred to as Hubis. The instant 35 U.S.C. 102(b) rejections are made in light of

the 35 U.S.C. 112 2nd rejections made supra.

As per independent claim **1**, Hubis teach,

- o A storage controller, comprising: a device interface adapter, for

    interfacing the storage controller to a plurality of logical storage

    devices; a host interface adapter, for interfacing the storage

    controller to a plurality of host computers; and a microprocessor,

    coupled to said device interface adapter and host interface adapter,

    for processing requests to transfer data between said plurality of

    logical storage devices and said plurality of host computers;

    (Column 7 lines 22-38 as shown in Figure 2A)

- o wherein each of said requests specifies one of said plurality of host

    computers and one of said plurality of logical storage devices for

    transferring said data between, wherein said host interface adapter

    is configured to receive said requests and to determine for each of

    said requests whether the host computer identified in said request

    is allowed to access the logical storage device identified in said

    request (Column 11 lines 45-53).

As per dependent claim **2**, Hubis teach,

- o The storage controller of claim 1, wherein if said host interface

    adapter determines said host computer identified in said request is

allowed to access said logical storage device identified in said request, said host interface adapter provides said request to said microprocessor, wherein said microprocessor responsively controls said device interface adapter to cause said device interface adapter to access said logical storage device specified in said request to transfer said data between said logical storage device and the storage controller (Column 11 lines 45-53).

As per dependent claim **3**, Hubis teach,

o The storage controller of claim 1, wherein if said host interface adapter determines said host computer identified in said request is not allowed to access said logical storage device identified in said request, said host interface adapter transmits to said host computer a response indicating that said host computer identified in said request is not allowed to access said logical storage device identified in said request (Column 11 lines 53-57).

As per dependent claim **4**, Hubis teach,

o The storage controller of claim 1, wherein if said host interface adapter determines said host computer identified in said request is not allowed to access said logical storage device identified in said request, said host interface adapter provides to said microprocessor an indication that said host computer identified in said request is not allowed to access said logical storage device identified in said request (Column 11 lines 53-57).

As per dependent claim **5**, Hubis teach,

- o The storage controller of claim 4, wherein said microprocessor

    causes said host interface adapter to transmit a response to said

    host computer identified in said request in response to said

    indication, wherein said response indicates said host computer is

    not allowed to access said logical storage device identified in said

    request (Column 11 lines 53-57).

As per dependent claim **6**, Hubis teach,

- o The storage controller of claim 1, wherein said host interface

    adapter is configured to interface said storage controller to said one

    or more host computers via an interface protocol (Column 7 lines

    22-38).

As per dependent claim **7**, Hubis teach,

- o The storage controller of claim 6, wherein said interface protocol

    comprises Fibre Channel (Column 7 lines 7-10).

As per dependent claim **8**, Hubis teach,

- o The storage controller of claim 6, wherein said interface protocol

    comprises Small Computer Systems Interface (SCSI) (Column 7

    lines 11-14).

As per dependent claim **10**, Hubis teach,

- o The storage controller of claim 6, wherein said interface protocol

    comprises one of the following protocols: Infiniband, Ethernet,

    TCP/IP, HIPPI, Token Ring, Arcnet, FDDI, LocalTalk, ESCON,

FICON, ATM, SAS, SATA, and combinations thereof (Column 7 lines 19-21).

As per dependent claim **13**, Hubis teach,

- o The storage controller of claim 1, wherein said microprocessor performing said processing requests comprises performing redundant array of inexpensive disks (RAID) processing (Column 7 lines 37-38).

As per dependent claim **14**, Hubis teach,

- o The storage controller of claim 1, wherein said plurality of logical storage devices comprise one or more physical storage devices (Column 7 lines 39-46).

As per dependent claim **15**, Hubis teach,

- o The storage controller of claim 1, wherein said plurality of logical storage devices comprise one or more disk storage devices (Column 7 lines 39-46).

As per dependent claim **16**, Hubis teach,

- o The storage controller of claim 1, wherein said plurality of logical storage devices comprise one or more CDROM storage devices (Column 7 lines 39-46).

As per dependent claim **17**, Hubis teach,

- o The storage controller of claim 1, wherein said plurality of logical storage devices comprise one or more tape storage devices (Column 7 lines 39-46).

As per dependent claim **18**, Kitamura teach,

- o The storage controller of claim 1, further comprising: a plurality of said microprocessors, coupled to said host interface adapter and said device interface adapter, wherein said host interface adapter determines which one of said plurality of microprocessors is configured to process requests for said logical storage device identified in said request and provides said request to said determined one of said plurality of microprocessors (Figure 2A shown as the individual fibre channel processors).

As per dependent claim **19**, Hubis teach,

- o The storage controller of claim 1, wherein each of said requests specifies one of said plurality of host computers based on a unique world wide name (Column 4 lines 49-53).

As per dependent claim **20**, Hubis teach,

- o The storage controller of claim 1, wherein each of said requests specifies one of said plurality of host computers based on an internet protocol address (Column 7 lines 19-21).

As per dependent claim **21**, Hubis teach,

- o The storage controller of claim 1, wherein each of said requests specifies one of said plurality of host computers based on an identifier in a SCSI request (Column 7 line 14).

As per dependent claim **22**, Hubis teach,

o The storage controller of claim 1, wherein each of said requests

specifies one of said plurality of logical storage devices in a

protocol-specific manner (Column 7 lines 10-14).

As per dependent claim **23**, Hubis teach,

o The storage controller of claim 22, wherein said protocol-specific

manner comprises an identifier in a SCSI request (Column 7 line

14).

As per independent claim **24**, Hubis teach,

o A storage controller for providing hosts controlled access to logical

storage devices, comprising: a memory, for storing an access table

specifying which of the hosts has access to which of the logical

storage devices; and (Figure 2A item 182)

o an interface adapter, coupled to said memory, configured to

interface the storage controller with a transport medium, receive on

said transport medium from one of the hosts a request to access

one of the logical storage devices, and determine from said access

table whether said one of the hosts has access to said one of the

logical storage devices (Column 3 lines 43-58).

As per dependent claim **25**, Hubis teach,

o The storage controller of claim 24, wherein said interface adapter is

configured to interface the storage controller with said transport

medium according to a predetermined protocol (Column 11 lines

45-51).

As per dependent claim **26**, Hubis teach,

- o The storage controller of claim 25, wherein said predetermined protocol comprises Fibre Channel (Column 7 lines 7-10).

As per dependent claim **27**, Hubis teach,

- o The storage controller of claim 25, wherein said predetermined protocol comprises Small Computer Systems Interface (SCSI) (Column 7 lines 11-14).

As per dependent claim **29**, Hubis teach,

- o The storage controller of claim 25, wherein said predetermined protocol comprises one of the following protocols: Infiniband, Ethernet, TCP/IP, HIPPI, Token Ring, Arcnet, FDDI, LocalTalk, ESCON, FICON, ATM, SAS, SATA, and combinations thereof (Column 7 lines 19-21).

As per dependent claim **30**, Hubis teach,

- o The storage controller of claim 25, wherein said predetermined protocol comprises a low-level block protocol (Column 11 lines 51-53). *The Examiner notes that as the system of Hubis allows the command to complete, or once access is granted, the system will access the data at a low-level on the drive associated with the logical volumes.*

As per dependent claim **31** Hubis teach,

- o The storage controller of claim 24, further comprising: a microprocessor, coupled to said interface adapter, for programming

said interface adapter to cause said interface adapter to transfer

data on said transport medium (Column 11 lines 45-51).

As per dependent claim **32**, Hubis teach,

o The storage controller of claim 31, wherein if said interface adapter

determines that said one of the hosts has access to said one of the

logical storage devices, said interface adapter provides said

request to said microprocessor, and said microprocessor

responsively processes said request to cause said one of the

logical storage devices to be accessed (Column 11 lines 51-53).

As per dependent claim **33**, Hubis teach,

o The storage controller of claim 31, wherein said microprocessor

comprises a general purpose microprocessor (Column 11 lines 51-

53).

As per dependent claim **34**, Hubis teach,

o The storage controller of claim 31, wherein said microprocessor is

distinct from said interface adapter (Column 11 lines 22-29). *The*

Examiner notes that as shown in Figure 2A and with respect to the

citing, the instant microprocessor is different from the interface

adapter.

As per dependent claim **39**, Hubis teach,

o The storage controller of claim 31, wherein said microprocessor

does not include a direct memory access controller (Column 15 line

53 to Column 16 line 9). *The Examiner notes herein that the microprocessor is distinct from the controller as noted supra.*

As per dependent claim **40**, Hubis teach,

o The storage controller of claim 31, further comprising: a storage device interface adapter, coupled to said microprocessor, configured to interface the storage controller with the logical storage devices (Column 15 line 53 to Column 16 line 9).

As per dependent claim **41**, Hubis teach,

o The storage controller of claim 40, wherein said microprocessor causes said storage device interface adapter to transfer data between the logical storage devices and the storage controller in response to said interface adapter providing said request to said microprocessor (Column 11 lines 51-53).

As per dependent claim **42**, Hubis teach,

o The storage controller of claim 24, wherein said interface adapter comprises a single integrated circuit (Figure 2A shown as the IC between the instant devices compromising the adapter).

As per dependent claim **43**, Hubis teach,

o The storage controller of claim 24, wherein said interface adapter comprises a set of integrated circuits specialized for performing a predetermined protocol on said transport medium (Figure 2A shown as the 'controller'). *The Examiner notes that as shown in Figure*

2A, there exists multiple integrated circuits for which the adapter

performs a protocol on over the transport medium.

As per dependent claim **44**, Hubis teach,

- o The storage controller of claim 24, wherein the storage controller

  creates said access table in said memory in response to user input

  (Column 9 lines 52-57). *The Examiner notes that Hubis teach the*

  logging in of the host computers to the array controller that causes

  the generation of the access table. Thus, Hubis teach the instant

  limitation of user input based on the dynamic generation of the

  table due to the host computers logging in.

As per dependent claim **45**, Hubis teach,

- o The storage controller of claim 44, further comprising: a

  management controller, coupled to said memory, for creating said

  access table in response to user input (Column 8 lines 52-57).

As per dependent claim **46**, Hubis teach,

- o The storage controller of claim 24, wherein said interface adapter

  maps a first identifier to a second identifier, wherein said first

  identifier is included in said request and is used by the host to

  specify said one of the logical storage devices, wherein said

  second identifier is used by the storage controller to specify said

  one of the logical storage devices (Column 8 lines 53-58).

As per dependent claim **47**, Hubis teach,

    o The storage controller of claim 46, wherein said interface adapter uses said second identifier to determine from said access table whether said one of the hosts has access to said one of the logical storage devices (Column 8 lines 55-58).

As per dependent claim **48**, Hubis teach,

    o The storage controller of claim 24, wherein said memory for storing said access table is comprised within said interface adapter (Figure 2A as shown with respect to item 182).

As per dependent claim **49**, Hubis teach,

    o The storage controller of claim 24, wherein said memory for storing said access table is directly coupled to said interface adapter (Figure 2A shown as the interconnection between 180 and 182).

As per dependent claim **50**, Hubis teach,

    o The storage controller of claim 24, wherein a computer program product comprising a computer usable medium having computer readable program code causes the storage controller, wherein said computer program product is for use with a computing device (Column 21 lines 43-51).

As per dependent claim **51**, Hubis teach,

    o The storage controller of claim 24, wherein a computer data signal embodied in a transmission medium comprising computer-readable program code provides the storage controller (Column 21 lines 43-51).

As per independent claim **52**, Hubis teach,

- o A method for controlling access by host computers to logical storage devices, the method comprising: performing a protocol to receive a request from a host computer to access a logical storage device; (Column 8 lines 43-46)

- o determining whether the host computer has access to the logical storage device; and (Column 9 lines 52-57)

- o causing the logical storage device to transfer data, if the host computer has access to the logical storage device based on said determining; (Column 11 lines 51-53)

- o wherein said performing the protocol and said determining are performed by an interface adapter, and said causing the logical storage device to transfer the data is performed by a microprocessor distinct from the interface adapter (Column 11 lines 45-53).

As per independent claim **54**, Hubis teach,

- o A storage controller for providing host computers access to storage devices, comprising: a microprocessor, for identifying each of the storage devices according to a unique internal identifier, and for processing requests to access the storage devices, each of said requests including a host identifier and an external identifier, said host identifier identifying one of the host computers making said

request, and said external identifier identifying one of the storage

devices to be accessed; and (Column 11 lines 37-44)

o a host interface adapter, coupled to said microprocessor, for

receiving said requests from the host computers and mapping said

external identifier received in said request to its said unique internal

identifier based on said host identifier received in said request

(Column 11 lines 45-53).

As per dependent claim **55**, Hubis teach,

o The storage controller of claim 54, further comprising: a mapping

table, accessible by said host interface adapter, for storing mapping

information, wherein said host interface adapter maps said external

identifier received in said request to its said unique internal

identifier based on said host identifier received in said request

using said mapping information stored in said mapping table

(Column 11 lines 16-20).

As per dependent claim **56** Hubis teach,

o The storage controller of claim 55, wherein each unique

combination of host identifier and external identifier identifies a

single one of the storage devices according to a many-to-one

mapping (Column 4 lines 59-63).

As per dependent claim **57**, Hubis teach,

o The storage controller of claim 54, wherein said host interface

adapter provides said unique internal identifier and said request to

said microprocessor for processing after said mapping said external

identifier to said unique internal identifier (Column 11 lines 8-15).

As per dependent claim **58**, Hubis teach,

o The storage controller of claim 54, wherein said host interface

adapter is further configured to perform a low-level protocol to

interface the storage controller with the host computers (Column 11

lines 51-53). *The Examiner notes that as the system of Hubis*

allows the command to complete, or once access is granted, the

system will access the data at a low-level on the drive associated

with the logical volumes.

As per dependent claim **59**, Hubis teach,

o The storage controller of claim 54, wherein said unique internal

identifier identifies a logical storage device, wherein said logical

storage device comprises a grouping of physical storage devices

(Column 5 lines 39-45 and Column 5 lines 48-49).

As per dependent claim **60**, Hubis teach,

o The storage controller of claim 54, wherein said unique internal

identifier identifies a logical storage device, wherein said logical

storage device comprises a portion of a grouping of physical

storage devices (Column 6 lines 39-45).

As per dependent claim **61**, Hubis teach,

o The storage controller of claim 54, wherein said unique internal

identifier identifies a logical storage device, wherein said logical

storage device comprises a portion of a physical storage device (Column 6 lines 39-45).

As per dependent claim **62,** Hubis teach,

o The storage controller of claim 54, wherein each of said requests specifies one of the storage devices in said external identifier in a protocol-specific manner (Column 6 lines 39-45).

As per dependent claim **63**, Hubis teach,

o The storage controller of claim 62, wherein said protocol-specific manner comprises a SCSI logical unit number (Column 17 lines 19-21).

As per dependent claim **64**, Hubis teach,

o The storage controller of claim 54, wherein said external identifier comprises a SCSI logical unit number (Column 17 lines 19-21).

As per dependent claim **65**, Hubis teach,

o The storage controller of claim 54, wherein said host interface adapter is further configured to perform access control based on said unique internal identifier and said host identifier (Column 17 lines 60-67).

As per independent claim **66**, Hubis teach,

o A method for mapping host-specific storage device identifiers to storage controller-specific storage device identifiers, the method comprising: receiving from a host computer a request to access one of a plurality of storage devices coupled to a storage controller,

the request specifying an identifier of the host computer and an

identifier of the one of the plurality of storage devices, wherein said

receiving is performed by a host interface adapter of the storage

controller; (Column 11 lines 38-44)

o mapping a combination of the host computer identifier and the

identifier of the one of the plurality of storage devices to a unique

identifier used by a microprocessor of the storage controller to

identify the one of the plurality of storage devices, wherein said

mapping is performed by the host interface adapter; and (Column

11 lines 8-15)

o providing the unique identifier to the microprocessor for processing

the request, wherein said providing is performed by the host

interface adapter (Column 11 lines 45-53).

As per independent claim **67**, Hubis teach,

o A storage controller, comprising: a first microprocessor, for

processing requests from a host computer to access one of a first

set of logical storage devices coupled to the storage controller; a

second microprocessor, for processing requests from said host

computer to access one of a second set of logical storage devices

coupled to the storage controller; and (Column 11 lines 8-15). *The*

Examiner notes that Hubis teach multiple controllers thereby

anticipating the instant limitation.

    o an interface adapter, coupled to said first and second

microprocessors, for receiving said requests from said host

computer, and for each of said requests determining whether said

request specifies a logical storage device in said first set or said

second set and providing said request to one of said first and

second microprocessors based on said determining (Column 11

lines 45-53).

As per dependent claim **68**, Hubis teach,

    o The storage controller of claim 67, wherein said first and second set

of logical storage devices are distinct (Column 5 lines 48-52 as

shown in Figure 2A).

As per dependent claim **69**, Hubis teach,

    o The storage controller of claim 67, wherein said first and second set

of logical storage devices are programmable (Column 5 lines 48-

52).

As per dependent claim **70**, Hubis teach,

    o The storage controller of claim 67, wherein said first and second set

of logical storage devices are user-configurable (Column 5 line 65

to Column 6 line 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to

be patented and the prior art are such that the subject matter as a whole would have been
obvious at the time the invention was made to a person having ordinary skill in the art to which
said subject matter pertains. Patentability shall not be negatived by the manner in which the
invention was made.

Claims **9** and **28** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Hubis and in view of Camble et al (U.S. 6,999,999) hereinafter

referred to as Camble.

As per dependent claim **9**, Hubis teach the limitations as noted supra.

Hubis does not explicitly teach the use of iSCSI.

Camble teach, the storage controller of claim 6, wherein said interface

protocol comprises Internet SCSI (iSCSI) (Column 7 lines 37-40).

Hubis and Camble are analogous art because they are from the same

field of endeavor, namely computer storage systems.

At the time of invention it would have been obvious to one of ordinary skill

in the art, having both the teachings of Hubis and Camble before him/her, to

extend the interfaces of Huibs to encompass iSCSI systems for the benefit of

increased compatibility.

The motivation for doing so would have been that increased system

capability allows for additional systems that the Hubis system is employed upon.

Increasing the number of interfacing standards also allows more flexibility when

selecting the components to comprise the system.

Therefore, it would have been obvious to combine Hubis with Camble for

the benefit of increased capability to obtain the invention as specified in claims 9

and 28.

As per dependent claim **28**, the combination of Hubis and Camble teach,

o The storage controller of claim 25, wherein said predetermined

protocol comprises Internet SCSI (iSCSI) (Column 7 lines 37-40 of

Camble).

Claims **11-12**, **35-38**, **53**, and **71** are rejected under 35 U.S.C. 103(a) as

being unpatentable over Hubis and in view of Kitamura et al (U.S. 2002/0199071)

hereinafter referred to as Kitamura.

As per dependent claim **11**, Hubis teach the limitations as noted supra.

Hubis does not explicitly teach the use of a buffer memory.

Kitamura teach, a buffer memory, coupled to said device interface adapter

and said host interface adapter, for buffering data transferred between said

plurality of host computers and said plurality of logical storage devices via said

host interface adapter and said device interface adapter (Paragraph 0026). *The*

Examiner notes that the cache memory of Kitamura anticipates the instant

limitation of buffer memory.

Hubis and Kitamura are analogous art because they are from the same

field of endeavor, namely selectively allowing host computers to access storage

devices.

At the time of invention it would have been obvious to one of even

rudimentary skill in the art, having both the teachings of Hubis and Kitamura

before him/her, to integrate the cache memory of Kitamura into Hubis for the

benefit increasing the speed of processing accesses from the host to the storage

system.

The motivation for doing so would have been that, the cache memory stores data frequently read from the disk or temporarily stores write data to be transferred from the host or the like to the storage system to thereby increase the speed of processing accesses from the host or the like (Paragraph 0026 of Kitamura).

Therefore, it would have been obvious to combine Hubis with Kitamura for the benefit of increased speed when processing accesses from the host to the storage system to obtain the invention as specified in claims 11-12, 35-38, 53, and 71.

As per dependent claim **12**, the combination of Hubis and Kitamura teach,

  o The storage controller of claim 11, wherein said microprocessor manages use of said buffer memory by said host interface adapter and said device interface adapter (Paragraph 0026 as shown in Figure 1 of Kitamura).

As per dependent claim **35**, the combination of Hubis and Kitamura teach,

  o The storage controller of claim 31, further comprising: a buffer memory, coupled to said interface adapter, for buffering data transferred between the hosts and the logical storage devices (Paragraph 0026 as shown in Figure 1 of Kitamura).

As per dependent claim **36**, the combination of Hubis and Kitamura teach,

  o The storage controller of claim 35, wherein said microprocessor is configured to manage use of said buffer memory for buffering said data (Paragraph 0026 as shown in Figure 1 of Kitamura).

As per dependent claim **37**, the combination of Hubis and Kitamura teach,

- o The storage controller of claim 35, wherein said interface adapter

  includes a direct memory access controller for controlling transfers

  of said data between said interface adapter and said buffer memory

  (Column 11 lines 38-44 of Hubis).

As per dependent claim **38**, the combination of Hubis and Kitamura teach,

- o The storage controller of claim 35, wherein said buffer memory

  comprises said memory for storing said access table (Paragraph

  0026 as shown in Figure 1 of Kitamura). *The Examiner notes that*

  the memory of Kitamura is used for the frequent access of

  frequently accessed data. The table is accessed frequently. Thus

  the table can be stored in the memory for ease of accessing.

As per independent claim **53**, the combination of Hubis and Kitamura

teach,

- o A storage router for providing virtual local storage on remote

  storage devices to devices, comprising: a buffer providing memory

  work space for the storage router; (Paragraph 0026 of Kitamura).

- o a first controller operable to connect to and interface with a first

  transport medium, operable to implement access controls for

  storage space on the storage devices; a second controller operable

  to connect to and interface with a second transport medium; and

  (Column 11 lines 8-15 of Hubis). *The Examiner notes that Hubis*

  teach multiple controllers, thereby anticipating the instant limitation.

    o a supervisor unit coupled to the first controller, the second
controller and the buffer, the supervisor unit operable to map
between devices connected to the first transport medium and the
storage devices and to process data in the buffer to interface
between the first controller and the second controller to allow
access from devices connected to the first transport medium to the
storage devices using native low level, block protocols (Column 11
lines 38-53 of Hubis).

As per independent claim **71**, the combination of Hubis and Kitamura

teach,

    o A storage router for providing virtual local storage on remote
storage devices to devices, comprising: a buffer providing memory
work space for the storage router; (Paragraph 0026 of Kitamura).

    o a first controller operable to connect to and interface with a first
transport medium, operable to map between devices connected to
the first transport medium and the storage devices; a second
controller operable to connect to and interface with a second
transport medium; and (Column 11 lines 8-15 of Hubis). *The
Examiner notes that Hubis teach multiple controllers, thereby
anticipating the instant limitation.*

    o a supervisor unit coupled to the first controller, the second
controller and the buffer, the supervisor unit operable to implement
access controls for storage space on the storage devices and to

process data in the buffer to interface between the first controller

and the second controller to allow access from devices connected

to the first transport medium to the storage devices using native low

level, block protocols (Column 11 lines 38-53 of Hubis).

Conclusion

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

1. U.S. 7,043,663 Pittelkow et al teach a system and method to monitor

and isolate faults that occur in a storage area network.

2. U.S. 6,480,934 Hino et al teach a storage control unit over a storage

area network.

Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Matthew Bradley whose telephone number is

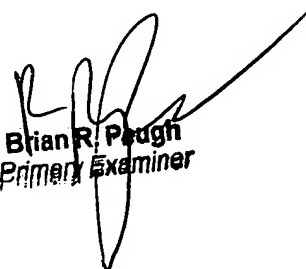(571) 272-8575. The examiner can normally be reached on 6:30-3:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Donald A. Sparks can be reached on (571) 272-4201.

The fax phone number for the organization where this application or proceeding

is assigned is 571-273-8300.

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DAS/mb

Brian R. Peugh
Primary Examiner